



PRODUCT SPECIFICATION

1.0 Applicable Connector: Applicable to DLK HDMI Series connector.

(适用于德力康公司 HDMI 系列连接器.)

Scope: This specification covers the requirements for product performance and test methods of DLK's HDMI Series Connectors of the part numbers specified as bellow.

(覆盖范围: 此规格书内容含盖德力康公司 HDMI 系列连接器产品性能及测试方法。)

2.0 Rating (要求):

2.1 Contact Current Rating: 0.5 Ampere Minimum.

(额定电流: 0.5A)

2.2 Contact Voltage Rating: 36 Volt Maximum.

(额定电压: <36V)

2.3 Temperature Range: -55°C to +105°C

(温度范围: -55°C 至 +105°C)

3.0 Test Condition (测试条件):

All tests shall be performed as bellow conditions unless otherwise specified.

(所有的测试都在下列条件下完成, 除非另有说明.)

3.1 Temperature range : +25°C

(温度: +25°C)

3.2 Humidity range: 40%

(湿度: 40%)

3.3 Atmospheric Pressure : 650 mm to 800 mm (866 to 1066mbar)

(大气压力: 650 mm 至 800 mm (866 to 1066 兆帕))

4.0 Test Methods and Requirements (测试方法和要求):

4.1 Examination of product (检查尺寸):

Item (条目)	Test Description (测试内容)	Test Methods (测试方法)	Requirement (要求)
4.1.1	Examination of product Outward Appearance Structure (检查尺寸)	Shall be confirm with eyes in accordance with each drawing. Shall be confirmed by using proper measuring instruments. (使用测量工具, 按图面要求检查)	Outward appearance shall be good without such injurious problem structure shall be meet the design and dimensional requirements of drawing (没有任何一项在图面要求之外的)

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4.2 Electrical performance (电气性能) :

Item	Test Description	Test Methods	Requirement
4.2.1	Contact Resistance (接触阻抗)	Mated connectors. Contact: measure by dry circuit, 20 mvolts maximum., 10mA Shell: measured by open circuit, 5 Volts maximum, 100mA. (ANSI/EIA-364-06A-83) (端子: 将公母头对插后, 在回路施加直流最大 20mV 10mA 的电流; 铁壳: 将公母头对插后, 在回路施加直流最大 5V 100mA 的电流; 再测量相对应端子或铁壳的电阻值)	Excluding conductor resistance : 10 milliohms maximum. (接触阻抗最大不能超过 10 毫欧)
4.2.2	Dielectric Strength (耐电压)	Unmated connectors, apply 500 Volts AC(RMS.) between adjacent terminal or ground. (ANSI/EIA 364-20, Method 301) Mated connector, apply 300 Volts AC(RMS.) between adjacent terminal and ground. (未对插的连接器, 在相邻的端子间施加 AC 500V 1mA 的电流 1 分钟; 对插的连接器在相邻的端子间施加 AC 300V 1mA 的电流 1 分钟;)	No Breakdown (没有损坏)
4.2.3	Insulation Resistance (绝缘阻抗)	Unmated connectors, apply 500 Volts DC between adjacent terminal or ground. (ANSI/EIA 364-21, Method 302) (未对插的连接器, 在相邻的端子间施加 DC 500V 1mA 的电流 1 分钟;)	100 megaohms minimum (unmated) (最小为 100 兆欧)
		Mated connectors, apply 150 Volts DC between adjacent terminal or ground. (对插的连接器在相邻的端子间施加 DC 150V 1mA 的电流 1 分钟;)	10 megaohms minimum (mated) (最小为 10 兆欧)
4.2.4	Contact Current Rating (额定电流)	55°C, maximum ambient 85°C, maximum temperature change (ANSI/EIA-364-70, TP-70) (给端子一个负载, 当温度分别达到 55°C 和 85°C 稳定状态下, 量测当时的电流)	0.5 A minimum (最小 0.5 A)
4.2.5	Applied Voltage Rating (额定电压)	36 Volts AC (RMS.) continuous maximum, on any signal pin with respect to the shield. (连续对所有端子施加最大 AC 36V 电压)	No Breakdown (没有如跳电或破裂之类的损坏)
4.2.6	TMDS Signals Time Domain Impedance	Rise time ≤ 200 psec (10%-90%). Signal to Ground pin ratio per HDMI designation. Differential Measurement Specimen Environment Impedance = 100 ohms differential Source-side receptacle connector mounted on a Controlled impedance PCB fixture. (ANSI/EIA-364-108 Draft Proposal)	Connector Area: 100 ohms \pm 15%

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4.2.7	TMD5 Signals Time Domain Cross talk FEXT	Rise time ≤ 200 psec (10%-90%) Signal to Ground pin ration per HDMI designation. Differential Measurement Specimen Environment Impedance = 100 ohms differential. Source-side receptacle connector mounted on Controlled impedance PCB fixture. Driven pair and victim pair. (ANSI/EIA-364-90 Draft Proposal)	5 % maximum
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4.3 Mechanical Performance:

Item	Test Description	Test Methods	Requirement	
4.3.1	Vibration (振动测试)	Amplitude:1.52 mm P-P or 147m/s ² {15G} (振幅: 1.52mm) Sweep time:50-2000-50Hz in 20 minutes. (频率: 20 分钟内变换 50- 2000-50Hz) Duration:12 times in each (total of 36 Times) X, Y, Z axes. (持续 时间: 每个方向 12 小时, 共 36 小 时) Electrical load: DC100mA current shall be Flowed during the test. (负载: 施 加 DC 100mA 电流测试) (ANSI/EIA-364-28 Condition III Method 5A)	Appearance (外观)	No Damage (没有损坏)
			Contact Resistance (接触阻抗)	Contact: Change From initial value: 30 Milliohms maximum. (端子: 测试后不得大于 30 毫欧) Shell Part: Change From initial value:50 Milliohms maximum. (外壳: 测试后不得大于 50 毫欧)
			Discontinuity (断讯)	1 μ sec maximum. (不能超过 1 微秒)
4.3.2	Shock (冲击测试)	Pulse width: 11 m sec., Waveform: half sine, 490m/s ² {50G}, 3 strokes in each (将对插后的连接器固定于冲击实验机 上, 并施加下列测试条件: 冲击时间: 11 毫秒 波形: 半正弦波 加速度最大 50G, 沿 3 个互相垂直的方 向)	Appearance (外观)	No Damage (没有损坏)
			Contact Resistance (接触阻抗)	Contact: Change From initial value: 30 Milliohms maximum. (端子: 测试后不得大于 30 毫欧) Shell Part: Change From initial value:50 Milliohms maximum. (外壳: 测试后不得大于 50 毫欧)

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			Contact Resistance (接触阻抗)	Contact: Change From initial value: 30 Milliohms maximum. (端子: 测试后不得大于 30 毫欧) Shell Part: Change From initial value: 50 Milliohms maximum. (外壳: 测试后不得大于 50 毫欧)
			Discontinuity (断讯)	1 μ sec maximum. (不能超过 1 微秒)
4.3.3	Durability (寿命测试)	Measure contact and shell resistance after Following. Automatic cycling: 10,000 cycles at 100 \pm 50 cycles per hour (将公座及母座焊接在 PCB 上, 然后以每小时 100 \pm 50 次的速度沿轴向插拔 10000 次)	Contact Resistance (接触阻抗)	Contact: Change From initial value: 30 Milliohms maximum. (端子: 测试后不得大于 30 毫欧) Shell Part: Change From initial value: 50 Milliohms maximum. (外壳: 测试后不得大于 50 毫欧)
4.3.4	Insertion/ Withdrawal Force (插入/拔出力)	Insertion and withdrawal speed: 25mm/mminute. (ANSI/EIA-364-13) (将公座或母座焊接在 PC 板上, 然后以每分钟 25mm 的速度沿轴向插拔 3 次后再测量其插入和拔出力)	Withdrawal Force (拔出力)	Initial: 9.8N {1.0kgf} minimum 39.2N {4.0kgf} maximum After 2000 cycles: 4.9N {0.5kgf} minimum 39.2N {4.0kgf} maximum 初始: 最小 9.8N {1.0kgf} 最大 39.2N {4.0kgf} 插拔 2000 次后: 最小 4.9N {0.5kgf} 最大 39.2N {4.0kgf}
			Insertion force (插入力)	44.1N {4.5kgf} maximum (最大 44.1N {4.5kgf})
4.3.5	Terminal retention (端子保持力)	Assembled in the housing at a rate of 25 \pm 3mm per minute. (沿胶芯组装面, 用每分钟 25 \pm 3mm 的速度拔出端子)	pull-out force (拔出力)	2.94N Minute Min (0.3Kgf Min)

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4.4 Environmental Performance:

Item	Test Description	Test Methods	Requirement	
4.4.1	Thermal Shock (冷热冲击)	10 cycles of: -55°C for 30 minutes +85°C for 30 minutes (ANSI/EIA-364-32, Condition I) (将连接器焊在 PCB 上后将其暴露在下列环境条件中循环 10 次: 置于-55°C ± 3°C 温度中 30 分钟, 再转换标准温度条件 10-15 分钟, 再转换至 +85°C ± 2°C 下 30 分钟, 再换至标准温度条件 10-15 分钟;)	Appearance (外观) Contact Resistance (接触阻抗)	No Damage (没有损坏) Contact: Change From initial value: 30 Milliohms maximum. (端子: 测试后不得大于 30 毫欧) Shell Part: Change From initial value: 50 Milliohms maximum. (外壳: 测试后不得大于 50 毫欧)
4.4.2	Humidity (恒温恒湿)	A Mate connectors together and perform the test as Follows. Temperature: +25°C to +85°C Relative Humidity: 80 to 95% Duration: 4 cycles (96 hours) Upon completion of the test, specimens shall be conditioned at ambient room conditions for 24 hours, After which the specified measurements shall be performed. (ANSI/EIA-364-31) (将公母座配对后, 放入下列环境中测试: 温度: +25°C - +85°C 湿度: 80-95% 时间: 4 天 (96 小时) 测试后产品应置于标准大气条件中 24 小时后再进行测量;)	Appearance (外观) Contact Resistance (接触阻抗)	No Damage (没有损坏) Contact: Change From initial value: 30 Milliohms maximum. (端子: 测试后不得大于 30 毫欧) Shell Part: Change From initial value: 50 Milliohms maximum. (外壳: 测试后不得大于 50 毫欧)

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		<p>B</p> <p>Unmated each connectors and perform the test as follows.</p> <p>Temperature: +25°C to +85°C</p> <p>Relative Humidity: 80 to 95%</p> <p>Duration: 4 cycles (96 hours)</p> <p>Upon completion of the test, specimens shall be conditioned at ambient room conditions for 24 hours,</p> <p>After which the specified measurements shall be performed.</p> <p>(ANSI/EIA-364-31) (将单个连接器, 放入下列环境中测试: 温度: +25°C--+85°C 湿度: 80-95% 时间: 4天(96小时) 测试后产品应置于标准大气条件中24小时后再进行测量;)</p>	<p>Appearance (外观)</p>	<p>No Damage (没有损坏)</p>
			<p>Dielectric Withstanding Voltage and Insulation Resistance (耐电压和绝缘阻抗)</p>	<p>Conform to item of Dielectric Withstanding Voltage and Insulation Resistance (符合耐电压和绝缘阻抗测试要求)</p>
4.4.3	Thermal Aging (热老化测试)	<p>Mate connectors and expose to + 105°C ± 2°C for 250 hours. Upon completion of the exposure period, the test specimens shall be conditioned at ambient room conditions for 1 to 2 hours, after which the specified measurements shall be performed.</p> <p>(ANSI/EIA-364-17, Condition 4, Method A) (将连接器放在+ 105°C ± 2°C的环境中250小时, 然后再移至标准温度条件下1-2小时, 再进行测量;)</p>	<p>Appearance (外观)</p>	<p>No Damage (没有损坏)</p>
			<p>Contact Resistance (接触阻抗)</p>	<p>Contact: Change From initial value: 30 Milliohms maximum. (端子: 测试后不得大于30毫欧) Shell Part: Change From initial value:50 Milliohms maximum. (外壳: 测试后不得大于50毫欧)</p>
4.4.4	Solder ability (焊锡性)	<p>Immerse the solder pin of the connector in the solder bath at 235°C ± 5°C for 2.5 ± 0.5seconds.</p> <p>After dipped the pin in the flux for 5 seconds.</p> <p>(将端子脚浸入助焊剂中5秒, 然后将端子脚浸入235°C ± 5°C的锡炉中2.5 ± 0.5秒.)</p>	<p>Solder wetting (粘锡面积)</p>	<p>90% of immersed area must show no voids, Pin holes. (锡附着面积应超过浸入表面积90%以上)</p>
4.4.5	Resistance to soldering heat (耐焊性)	<p>Place the connector on the PCB, then immerse the solder pin up to the surface of the board in the solder bath at 260°C+5°C for 10 seconds.</p> <p>(将产品置于PCB上, 然后将Pin脚部分浸入260+5°C的锡炉中10秒)</p>		<p>1、 Without deformation of case or excessive lossen.(塑胶不得有明显变形或损坏) 2、 Electrical characteristics shall be satisfied.(电气特性必须符合规格)</p>
4.4.6	BPR Soldering Test	<p>1. Solder pot temp.:190°C ± 5 2. Solder composition:Sn-(57.6)Bi-(0.4)Ag or Sn-(58)Bi 3. Test condition:Part 3 Seconds to lead the solder pot dipping</p>		<p>Decision Results:Dipping as more than 95% of lead soldering be.</p>

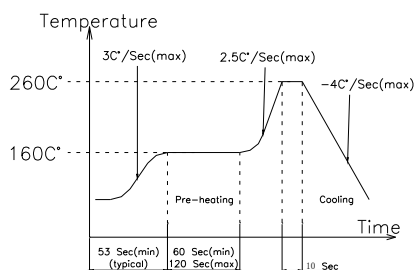
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4.4.7	BPR Soldering Heat Test	Product 180 degree 10 minute leaving alone.	There will not be external variation to the product and will have to be satisfactory in the shovel and foot thing power SPEC																			
4.4.8	Salt Spray (盐水喷雾)	Salt density:5% Temperature: 35± 2°C 盐水浓度：5% 温度：35± 2°C After keeping in above surrounding for 48 hours EIA-364-26	<table border="1"> <thead> <tr> <th>膜厚類型</th> <th>測試時間</th> <th>判定</th> </tr> </thead> <tbody> <tr> <td colspan="3">USB / DVI&D-SUB / DP CONN / HDMI / AC SOCKET</td> </tr> <tr> <td>鍍錫部位</td> <td>24H</td> <td rowspan="6">無氧化, 銹蝕 (錫脚鍍錫區不作要求)</td> </tr> <tr> <td>鍍錫之焊錫部位</td> <td>24H</td> </tr> <tr> <td>金屬件與非金屬/折彎處/切口</td> <td>24H</td> </tr> <tr> <td>外部連接 port</td> <td>48H</td> </tr> <tr> <td>接觸端鍍金(包含 15u"與 15u"以上)</td> <td>48H</td> </tr> <tr> <td>接觸端鍍金(包含 15u"以下上)</td> <td>48H</td> </tr> </tbody> </table>	膜厚類型	測試時間	判定	USB / DVI&D-SUB / DP CONN / HDMI / AC SOCKET			鍍錫部位	24H	無氧化, 銹蝕 (錫脚鍍錫區不作要求)	鍍錫之焊錫部位	24H	金屬件與非金屬/折彎處/切口	24H	外部連接 port	48H	接觸端鍍金(包含 15u"與 15u"以上)	48H	接觸端鍍金(包含 15u"以下上)	48H
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4.5 Hot air reflow or IR reflow for SMD curing process: (回流焊參考溫度):



The recommended conditions for the reflow temperature profile

5.0 Test Sequence:

Test Group (a) [ⓐ]		Sample Groups						
Test Item [ⓐ]	Test Description [ⓐ]	A [ⓐ]	B [ⓐ]	C [ⓐ]	D [ⓐ]	E [ⓐ]	F [ⓐ]	G [ⓐ]
4.1.1 [ⓐ]	Examination of the connectors [ⓐ]	1,4,7 [ⓐ]	1,5 [ⓐ]	1,7 [ⓐ]	1,7 [ⓐ]	1,4 [ⓐ]	ⓐ	ⓐ
4.2.1 [ⓐ]	Contact Resistance [ⓐ]	2,5,8,10 [ⓐ]	2,4 [ⓐ]	2,4,6 [ⓐ]	ⓐ	ⓐ	ⓐ	ⓐ
4.2.2 [ⓐ]	Dielectric Strength [ⓐ]	ⓐ	ⓐ	ⓐ	3,6 [ⓐ]	ⓐ	ⓐ	ⓐ
4.2.3 [ⓐ]	Insulation Resistance [ⓐ]	ⓐ	ⓐ	ⓐ	2,5 [ⓐ]	ⓐ	ⓐ	ⓐ
4.2.4 [ⓐ]	Contact Current rating [ⓐ]	ⓐ	ⓐ	ⓐ	ⓐ	2 [ⓐ]	ⓐ	ⓐ
4.2.5 [ⓐ]	Applied Voltage Rating [ⓐ]	ⓐ	ⓐ	ⓐ	ⓐ	3 [ⓐ]	ⓐ	ⓐ
4.2.6 [ⓐ]	TMDS Signals Time Domain Impedance [ⓐ]	ⓐ	ⓐ	ⓐ	ⓐ	ⓐ	1 [ⓐ]	ⓐ
4.2.7 [ⓐ]	TMDS Signals Time Domain Cross talk FEXT [ⓐ]	ⓐ	ⓐ	ⓐ	ⓐ	ⓐ	2 [ⓐ]	ⓐ
4.3.1 [ⓐ]	Vibration [ⓐ]	3 [ⓐ]	ⓐ	ⓐ	ⓐ	ⓐ	ⓐ	ⓐ
4.3.2 [ⓐ]	Shock [ⓐ]	6 [ⓐ]	ⓐ	ⓐ	ⓐ	ⓐ	ⓐ	ⓐ
4.3.3 [ⓐ]	Durability [ⓐ]	9 [ⓐ]	ⓐ	ⓐ	ⓐ	ⓐ	ⓐ	2 [ⓐ]
4.3.4 [ⓐ]	Insertion force [ⓐ]	ⓐ	ⓐ	ⓐ	ⓐ	ⓐ	ⓐ	1,3 [ⓐ]
ⓐ	Removal force [ⓐ]	ⓐ	ⓐ	ⓐ	ⓐ	ⓐ	ⓐ	ⓐ
4.4.1 [ⓐ]	Thermal Shock [ⓐ]	ⓐ	ⓐ	3 [ⓐ]	ⓐ	ⓐ	ⓐ	ⓐ
4.4.2 [ⓐ]	Humidity [ⓐ]	ⓐ	ⓐ	5a [ⓐ]	4b [ⓐ]	ⓐ	ⓐ	ⓐ
4.4.3 [ⓐ]	Thermal aging [ⓐ]	ⓐ	3 [ⓐ]	ⓐ	ⓐ	ⓐ	ⓐ	ⓐ
Number of Test Sample (Minimum) [ⓐ]		5 [ⓐ]	5 [ⓐ]	5 [ⓐ]	5 [ⓐ]	5 [ⓐ]	5 [ⓐ]	5 [ⓐ]

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